

**Meeting the Challenge of Academic  
Diversity: Actions of Secondary Social  
Studies and Science Teachers**

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Running Head: Meeting the Challenge

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### **Abstract**

The goal of this research was to identify what actions teachers take to include all students in learning in academically diverse secondary classrooms. Information was gathered through a collaborative project with 52 secondary social studies and science teachers . These teachers participated in a series of Cooperative Study Groups (CSG's) to answer questions about what actions they took to deal with academic diversity in their classes.

In general teachers reported that they used a variety of instructional activities and materials to accommodate diverse student preparation, ability and interest in their classrooms. They also indicated that they use a variety of motivational techniques to engage all students in learning, and they also use cooperative learning and peer tutoring. This group of teachers did not identify using assessment or evaluation as a means to better accommodate diversity in their classrooms. The question arises as to whether teachers might be better able to address diversity in their classes if they regarded evaluation as a source of information about student learning problems as well as a means to describe student progress.

## **Meeting the Challenge of Academic Diversity: Actions of Secondary Social Studies and Science Teachers**

Today teachers encounter in their classrooms great academic diversity among their students. Contributing to this diversity are the increasing numbers of students with disabilities who are being placed in general education settings (Lovitt, 1989). Planning to teach such classes is a challenge to all teachers but it is an especially difficult challenge for secondary teachers who only see their students for one period each day. Adaptive techniques such as allowing more time to complete classwork or providing additional instruction to students experiencing difficulties becomes more difficult in a typical secondary school setting where scheduling flexibility is minimal.

The purpose of the research reported on here has been to identify actions taken by secondary teachers to accommodate the learning needs of all students, including those with disabilities placed in mainstream classrooms.

To conduct this research, the IRLD research staff selected an approach based on a collaborative research-and-development process involving teachers, administrators, and researchers. It is our belief that teachers' knowledge about their content areas and the students in their classrooms can provide critical insights into the research and development process.

To incorporate teacher knowledge and experience we established a cooperative *relationship* between our research staff and teachers for the purpose of identifying problems facing teachers of academically diverse classes. Small work groups called Cooperative Study Groups (CSGs), comprised of teachers and investigators representing the research project were established. These work groups served as the primary force in determining the direction of research and carrying it out. Teachers made a four-year commitment either to serve directly in the Cooperative Study Groups or to support the direction of the groups by carrying out CSG initiatives. In all instances, the primary purpose of the CSGs was to explore teachers' experiences with planning for and teaching in academically diverse secondary science and social studies classrooms.

This report, which presents findings from the initial work of the Cooperative Study Groups, specifically addresses the barriers that teachers face in teaching an academically diverse class.

## Method

### Initiating the Cooperative Study Group Process.

An invitation to apply for project participation was extended to all secondary social studies and science teachers in two school districts in eastern Kansas. We sought teachers who were interested in jointly conducting research related to meeting the challenge of planning and teaching in the face of academic diversity.

Each teacher's class schedule and class composition was requested to determine the extent of academic diversity in their classes and to screen for students participating in special education programs. Since our goal was to identify a pool of teachers with whom we could work for the duration of the project, we also identified those teachers who had previously worked with students with mild handicaps and who would likely continue to have these types of students in their classes. Nevertheless, it was impossible to ensure these teachers would always have students with mild handicaps in their classes across the time period of this project.

Approximately 76 teachers expressed an interest in participating. However, phone calls to each applicant explaining the time commitments involved, reduced the pool of teachers to 52. Participating teachers were informed that they would become part of a research team that would meet and discuss problems and solutions as well as identify and implement interventions appropriate to the classroom setting. At the first meeting, teachers were organized into groups of four to eight. These groupings, referred to as Cooperative Study Groups, served as the basis for identifying issues and barriers in planning.

To facilitate the start-up of the Cooperative Study Groups, a set of questions related to the problems of teaching and planning for academically diverse groups of students was developed. The questions and questioning process were first discussed with Dr. Christopher Clark of Michigan State University, who served as a project consultant on teachers' planning processes, and were then piloted twice.

The first pilot was conducted with project staff, the second involved four teachers in a local school district that was not participating in the study. Based on this pilot, the questions and questioning format were modified and procedures for conducting the CSGs were developed and put into written form. Additionally, three project staff members were trained as moderators and six research assistants were trained as note takers and recorder assistants. Finally, the duties and responsibilities of note takers and recorder assistants were specified in writing.

## Subjects

Fifty-two teachers participated in the first CSG meetings. For 51 of the 52 teachers for whom demographic data was collected, 25 were men and 26 were women. With a mean age of 46 years (range=31-63 years), most were very experienced teachers, having taught for an average of 20 years (range=1-36 years;  $SD=8$  years); only six teachers had taught for less than 10 years. Eleven were middle school science teachers, 18 were high school science teachers, eight were middle school social studies teachers, and 14 were high school social studies teachers. Four of the teachers held part-time positions (i.e., they taught 1-3 classes per day), the remaining taught full time.

The teachers were teaching an average of 4.66 classes per day with a total average student enrollment of 107. They averaged about two class preparations per day (range=1-4) and had one class period for planning within the school day. They reported that an average of 5.7% of the students in their classes were students with learning disabilities; in addition, an average of 11% of their students could be considered at-risk for failure in school.

## Procedures and Measures

Teachers were asked to meet as a group three times in the spring of 1990. The first set of meetings for 14 groups (ranging in attendance from one to seven participants) was held in February and March. The first time the teachers met for a two-hour period after school in one of the district administration offices or at a meeting room on the campus at the University of Kansas. No meeting was held in the teachers' schools. An attempt to group high school and middle school teachers separately proved feasible for seven of the 14 groups. Teachers received ten dollars in appreciation for their participation in each of the meetings.

At each meeting, participants were asked questions about barriers and issues related to teaching in the face of academic diversity. Each group was to be asked the same set of four questions. Due to time constraints, however, not all groups discussed all four questions. The first question was always presented first to each group. The second, third, and fourth questions, discussed by 12 of the 14 groups, were presented randomly across the groups to ensure that all questions would be covered and to control for possible order effects. Teachers were asked questions that required them to think of their most academically diverse class. An academically diverse class was defined as "a class comprised of students with widely varying achievement levels such as a class with individuals with learning disabilities, other low-achieving students, as well as average-

achieving students." The second question asked, the question reported on here, was "Thinking back on the last year of teaching, what would you say has been the most difficult obstacle that you have had to overcome in teaching science or social studies to an academically diverse group of students?" This question was discussed by 44 teachers divided into 12 groups.

Each question was posed, one at a time, by a researcher who served as a moderator for the group. Also present were two research assistants; one took notes about teachers' responses and the other audio taped the session. The teachers discussed each question for 15-20 minutes. When responses were no longer forthcoming, the moderator summarized (orally and in list form on a large tablet) the major points. The moderator then asked the group members to check the accuracy of the summarized statements. The teachers also were asked whether they wished to add anything to the listed responses. Any new suggestions were added to the list.

Next, the teachers were asked to indicate to what degree they agreed with each item or to what degree it represented a specific barrier or problem for them. For this purpose, they wrote down the summarized statements on a special form and indicated their agreement with each item on a 7-point Likert-type scale (ranging from "1" - "I strongly agree" - to "7" - "I strongly disagree"). This process of finalizing the list and rating the responses was referred to as the "Member Check" phase of data collection.

### **Teacher Evaluation of the Cooperative Study Group Process**

Feedback from teachers in the Cooperative Study Group process was overwhelmingly positive. Except for a few personal problems or concerns, all the teachers indicated that they would be interested in participating in this type of research effort in the future. When asked about participating in a summer research effort, 28 volunteered.

### **Data Analysis**

The implementation of the CSGs has yielded several types of information: basic demographic data about the teachers and transcripts of all CSG meetings. Reliability checks have been performed on the accuracy of these transcriptions. Finally, the data collected through the Member Check process have been compiled and categorized.

The data were analyzed by two methods: transcript evaluation and quantitative compilation. For the transcript evaluation process, the audio tapes of the meeting and the notes taken by the research assistant and the moderator were used to create a transcript of the meeting. These transcripts were used to interpret the meaning of items



generated through the Member Check process and to identify themes and trends in the data that were not apparent from the Member Check data. The transcripts were read and major impressions were summarized by two independent readers who had participated in the Cooperative Study Group meetings. These impressions were synthesized, and a set of summary statements was generated.

After all groups had met, project staff developed categories for grouping (sorting) teacher responses. All responses in the Member Checks from the 12 CSG meetings were placed on individual 3X5 cards and grouped by the question to which they related. Each group of cards was then sorted into categories. The wide range of responses made the categorization process difficult. A procedure was developed to establish three overall category headings: (a) *Instructional Actions* -- actions directly related to providing instruction, materials, or assessment that engaged all learners and maintained their engagement and success in the learning process; (b) *System-Related Actions* -- actions related to organizational or structural patterns in schools; and (c) *Professional Actions* -- such as attending workshops or pursuing other professional development activities.

A project staff member and a research assistant devised subcategories within each category as appropriate for each question. Another research assistant then sorted the cards into the developed categories and noted any difficulties with individual responses or categories. Some categories were revised in response to this feedback and some alternate choices (39.1% of all responses for this question) were allowed. Finally, categories and subcategories achieved, for this question, interrater reliabilities of 87% and 83% to verify the sorting. These reliabilities were achieved by having two research assistants, not involved in developing the final categorization, sort responses independently into the developed categories.

Since the teachers had indicated on the Member Check forms their level of personal agreement with each item generated in their group in response to each question, it was possible to determine the relative agreement between the group-generated Member Check items and an individual teacher's viewpoint. Since Member Check items were not commensurate across groups, a method of determining within-group agreement, or the homogeneity of attitudes toward stated Member Check items within each group, was attempted. A homogeneity index was calculated for each respondent under each question by taking the standard deviation of his or her responses to the Member Check items under each question and then calculating its reciprocal, or dividing one by the standard deviation value. To determine the degree to which individuals in each of the groups were in consensus on each question, the standard deviation of the



homogeneity indexes for each respondent was calculated. This calculation was carried out for each of the four questions.

The Member Check ratings also allowed us to calculate teacher agreement with the pooled items in each subcategory. In order to analyze this level of agreement, teachers' numerical ratings for items assigned to a specific subcategory were totaled and divided by the number of teachers who had ranked those items in that subcategory. Items, or responses, with an average rating close to "1" showed that most of the teachers agreed with it (i.e., it held personal meaning for them), whereas responses having an average rating closer to "7" showed that most of the teachers did not agree (i.e., it did not hold personal meaning for them.)

Finally, transcripts of all the cooperative study groups were read and reviewed holistically to assure that issues identified quantitatively in the Member Check process reflected the qualitative tenor of the discussions in the groups. Where there was extended discussion of issues not highlighted by Member Check data, the nature and quality of those discussions are noted in the Results and Discussion below.

## Results

In response to the question, "Thinking back to your most diverse class this year, what actions did you take to meet the biggest challenge presented by that class?", teachers in our study groups most often identified various kinds of instructional activities and/or materials or motivational actions as the means they used to address the challenge of diversity. Cooperative learning techniques were also identified as important. However, even as teachers described actions they had taken there was an undertone of frustration in most groups, indicating that many teachers were not altogether satisfied with how they had met the challenge of diversity in their classrooms. Appendix 1 shows the results of the Member Check analysis for this question, including the subcategories of responses, the number of responses fitting each subcategory, the number of groups contributing responses to the subcategory, and the aggregate agreement rating for the items represented by each subcategory.

The frustration described by teachers in accommodating diversity is consistent with findings that identify adapting instruction to the needs of slow learners as one of the special problems of experienced teachers in the United States (Veenman, 1984, p. 159). Corno and Snow (1986), in their survey of research on the adaptation of teaching to individual differences, argued that

"The majority of students will need more aptitude support than conventional teaching provides.... Available theory of aptitude for learning from teaching would hypothesize that such learning involves accessing, adapting and applying whatever cognitive systems and structures a student already has, and inventing new systems and structures as necessary, to overcome whatever instructional impediments each student encounters." (p. 625)

Likewise, Waxman, Wang, Anderson, and Walberg (1985) showed in a synthesis of empirical studies that adaptive instruction can have a positive impact on student outcomes among diverse groups of learners. However, others voice some cautions about adaptive instruction. For example, Cronbach (1967) suggested that teachers may over differentiate among their students and that they base such differentiation among their students on informal cues and observations. According to Cronbach, such intuitive adaptations may occasionally be harmful, because the "differential information" about students may be inaccurate (pp. 29-30). Further, Good and Stipek (1983) took the position that "there are no simple, generalizable methods to achieve optimal learning" in diverse groups of students (p. 10). The need for further research in this area is apparent.

### **Instructional Actions**

While there may indeed be no "simple" method to address diversity, it remains likely, as Goodlad (1984) observed, that "The data on individual differences have more compelling implications for pedagogical than for curricular differentiation" (p. 289). For the most part, teachers in our study seem to have incorporated that outlook into their planning to accommodate diversity. In discussing what actions they had taken to meet the challenge presented by their most diverse class, nine of the 12 groups identified a variety of both specific or general instructional activities they plan for to address diversity in their classes. These activities included projects, various kinds of drill and practice, use of computers, and activities designed to (a) involve all students in learning, (b) provide for student choice, and (c) motivate students.

The use of computers was mentioned twice as a way to address diversity in the classroom, but only two teachers, each in a separate group, mentioned using this technology. Further, each of these teachers was alone in their group in indicating on the Member Check that they used computers as an aid in accommodating individual differences in the classroom. Computerized instruction, identified by Corno and Snow (1986) as "an important vehicle for the effective application of adaptive teaching," (p. 614) apparently has not yet arrived in most of these teachers' classrooms.

The finding that teachers most often cited as the action they took to address diversity indicates that, at least on some conscious level, they incorporate concern for individual differences into their planning. While teachers in our groups indicated that they look to a variety of instructional activities as a way to address diversity, there was no consistent indication that more than a few teachers attempted to plan activities on an individualized basis. Rather, the teachers reported using a variety of activities over time with the whole class participating in each activity. This is consistent with a finding by Goodlad (1984) that, despite many years of urging teachers to provide for student differences in learning rates and style, students observed in that study "worked independently at all levels but primarily on identical tasks, rather than on a variety of activities designed to accommodate their differences" (p. 105).

The second largest number of responses to the question of what actions the teachers had taken to address diversity was related to motivational techniques, including the use of incentives and instructional devices to appeal to students' interests. This category includes 15 items generated across 11 of the 12 groups discussing the question. Wang and Lindvall (1984) noted that one of the important differences between more and less "proficient" learners is believed to be "the ability to assume an active role in learning" (p. 209). By trying to entice students into the learning process through motivational activities and actions, teachers in our groups were trying to address this issue. They were also responding to a growing problem of student apathy. Thus, in its report *The Condition of Teaching*, (1990), the Carnegie Foundation reported that 46% of secondary teachers participating in their study said "apathy among students" is a "serious" problem in their school (p. 3).

Eight groups generated 15 items related to particular whole-group, direct, instructional methods. These items covered a wide range of instructional techniques from lecturing more to lecturing less and from the divergent-- teaching the process of thinking --to the convergent-- adding learning strategies and breaking learning down into smaller segments. Another related subcategory, Instructional Actions, involved varying teaching methods as a means of addressing diversity in the classroom. This subcategory generated nine items across seven groups, but three of them duplicated items in the whole-group instruction subcategory, and only four specifically addressed the use of variety in the classroom. Two additional responses related to variety appeared in another category -- Activities -- where using a range of activities was mentioned along with field trips to provide variety.

The fourth major subcategory involved using different groupings, such as cooperative learning, working in groups, pairing and peer tutoring. This category

generated 13 items across eight groups. Significant also was the strong agreement among teachers within groups on the use of these techniques. Specifically, 12 of the 13 items produced a mean ranking of between 1 and 2 on the Member Check Likert-scale, with a value of "1" indicating that the item was "very true" for each respondent.

Corno and Snow (1986) noted that not only has cooperative learning been shown to have positive effects on academic achievements, but the "small-group context and group incentive structure permit more individualized attention, relationship building and the possibility of experiencing success on a short time cycle" (p. 622). Corno and Snow also noted that the hypothesis emerging from studies on cooperative learning is that "cooperative small groups of judiciously mixed abilities can be used to transfer some of the teacher mediation function to the more able learners in such groups" (p. 622). This certainly describes the experience of one of our teachers who proclaimed that "Cooperative learning groups made a big difference. I got the most positive feedback. 'I really get it,' said students. Ah, my life is worthwhile. I regret that I didn't start it at the beginning of the year."

Materials and the uses made of them constitute another important subcategory of actions taken to meet the challenge of diversity. While textbooks appear to constitute the basic instructional materials for most teachers in our groups, teachers supplement textbooks with other materials and media. Some teachers reported using alternate or supplementary textbooks for some students.

Other subcategories included actions related to classroom climate and structure (eight items across five groups), assignments (seven items across five groups), modifying curriculum goals (six items across four groups), modifying student behavior (five items across three groups), structuring more instruction (four items across four groups), and modifying evaluation processes (three items across two groups).

Several observations may be made about the responses in the last six subcategories. Although most of the teachers in our study groups apparently try to adjust their planning for whole groups to accommodate a variety of abilities as well as a variety of levels of student motivation, most seemed not to differentiate assignments or academic expectations, especially for less able learners. Additionally, no teachers reported adapting instruction or assignments for individual students based on individual student strengths or weaknesses. Planning for multiple levels of work to suit multiple levels of student abilities or providing for student choice were actions mentioned in only two groups.

Evaluation as a means of addressing diversity was also mentioned in only two groups--one of those two groups advocated testing less often in diverse classrooms. No

group mentioned evaluation and assessment for the purpose of identifying student strengths or weaknesses.

Teachers in our groups did not agree on whether more or less structured instructional methods or more or less structured classroom environments were helpful in dealing with student diversity. Four teachers in four different groups responded that they tried to have more structured instruction in their diverse classrooms whereas five teachers in some of the same groups indicated that they either loosened up in their classroom interactions with students or tried to create more flexible environments.

Generally, student behavior problems were not viewed as a feature of diverse classrooms requiring much action. Further, modifying student behavior was mentioned in only three groups, and in only one of those groups was off-task behavior specifically seen as a problem. These results may reflect the teachers' high level of teaching experience, however.

### **System-Related Actions.**

Six responses fell in this general category. Three groups generated responses related to better student placement as a means of dealing with diversity. Three other groups made three comments indicating that finding extra time or help for students experiencing difficulties was a way to cope with diversity.

The small number of responses in the general area of administrative/system actions does not adequately reflect the qualitative discussions in some groups about this topic. This is to some extent a function of the way the question was structured. Asking teachers what actions they took to address diversity did not easily allow for responses related to actions that had been or might have been taken by others but that nevertheless had an impact on what teachers were trying to accomplish. This problem is apparent in the transcripts of discussions in three groups where some or all participants talked at length about administrative actions or features of their school's structure that inhibited their abilities as teachers to deal with diversity.

Some teachers complained about poor student placement practices and about tracking, while others stated that lack of adequate resources, such as lab equipment, or the absence of administrative action to ease poor teaching conditions, such as overcrowding in their classrooms, made dealing with diversity not only frustrating but in some ways counterproductive: the reward they received for coping with the lack of resources or overcrowding was that no actions were taken by administrators to rectify the problems. Other teachers pointed out how the lack of departmental cooperation or



district support for professional development activities diminished their abilities to accommodate diversity in their classrooms.

### **Professional Actions.**

For the final category, Professional Actions, two items were mentioned by the same group: attending workshops or inservice presentations and working extra hours.

**Within-group agreement results.** Based on the indexes of homogeneity of attitudes toward Member Check items in each group, the groups can be divided into three categories: most consistent, moderately consistent, and nonconsistent. Table 1 lists the within-group agreement results for the 12 groups with more than one participant. Values are to be interpreted in the same manner as standard deviations, that is, low values indicate less variation and more agreement among group members, whereas high values reflect more variation and less agreement. Groups #4, 5, 7, 9 and 10 showed the most consensus. The variability observed in members' indexes was low. Group #1 also demonstrated agreement between members, but only because there were complete data for only one of the group members. No groups fell into the category of moderately consistent on this question.

Table 1

#### Homogeneity Indexes for Cooperative Study Group 1 Sessions

Group	Question 2
Group 1	*
Group 2	* *
Group 3	.63
Group 4	.16
Group 5	.26
Group 6	.87
Group 7	.15
Group 8	.71
Group 9	.16
Group 10	.65
Group 11	.06
Group 12	* *

\* Complete data for only one member.

\* \* Question not discussed by group.

The third category, the nonconsistent group, was comprised of Groups #3, 6, 8 and 10. The indexes observed for the group members belonging to groups in this category were highly variable.

### Discussion

The challenge of diversity may have many dimensions, from the need to individualize instruction and motivate reluctant learners to the need to modify student behavior to keep all students on task. Teacher responses in our groups varied widely but were generally centered on means to motivate students or means to address differences in students' abilities. This outcome is consistent with studies to date which have indicated, according to Corno and Snow (1986), that "only two student aptitude variables are routinely identified by teachers as a basis for instructional decision making. These are generally characterized as 'ability' and 'motivation'" (p. 614). Ability may be addressed through adaptive teaching according to Corno and Snow, who cited two basic approaches to adaptive teaching: directly developing the aptitudes needed for further instruction or finding ways to circumvent or otherwise compensate for sources of inaptitude (p. 607). These authors also note that an essential criterion for judging the effectiveness of adaptive teaching is "the degree to which the alternative teaching operations are...tied to valid assessments of the states of possible learner aptitude. If differential treatment of learners is based on invalid assessments, the teaching system may become maladaptive" (p. 607).

This comment is noteworthy here because several of our teachers said that they do not group students or otherwise adapt instruction until they have had an opportunity to observe student reactions and achievements during the first few weeks of the school year; yet no teacher mentioned administering or taking into account any kind of formal assessment for the purpose of identifying individual student academic strengths or weaknesses. Teachers in our groups may, without consciously thinking about it, follow a process of micro and macro adaptation that Cronbach found notable for its informality:

The teacher picks up some cues from the pupil's test record and his daily work, and other cues from rather casual observation of his social interactions. The teacher forms an impression of the pupil from the cues, usually without an explicit chain of reasoning. He proceeds on the basis of the impression to alter the instruction; the adaptation too is intuitive, without any explicit theory. No doubt the decisions tend to be beneficial, but there is reason to think that intuitive adaptations of this kind will be inefficient and occasionally may be harmful. (p. 29)



So the question remains, can teachers adapt instruction meaningfully for diverse groups of learners without information that is more precise than unsystematic classroom observation?

Most of the teachers in our study groups reported using a variety of teaching techniques to meet the challenge of diversity in their classrooms. Cooperative learning and group work were identified most often, but the need to incorporate variety in classroom teaching and activities was mentioned again and again. As one teacher said, "You can't get students to respond to the same techniques all year. You need a smorgasbord of activities." A few teachers believed that lectures and structured classroom activities work best for diverse groups of students, but more teachers viewed this approach as ineffective, especially for slower learners: "I try to stay away from lecturing; that just doesn't work with average and below average kids very well."

A number of teachers were frustrated by the great range of diversity in their classes and viewed placement decisions made by others as the source of their problems. Some of these concerns were expressed by teachers of honors or advanced classes who felt that there were too many unprepared or unmotivated students in their classes: "I have an honors biology class. I call them my remedial honors class. Heaven knows why some are in there." At the other end of the spectrum, some teachers are having to teach classes overloaded with students identified as having special needs: "I have 23 students in a remedial class, 12 from the learning center and 13 from the behavior center." This teacher went on to note, ironically, that he thought that, by law, special education teachers (he is not one) are supposed to have only 10 students at one time. This is not, in fact, the law but it is a belief apparently developed through conversations with other teachers.

Most secondary-level placement decisions are made by guidance personnel in schools. Although the quality of guidance services does not "fit" in a discussion of teacher actions taken to address diversity, placement concerns were strong in two of our groups. The dissatisfaction of some teachers with the counseling/guidance services in their schools coincides with the finding of the Carnegie Foundation (1990) that fully 70% of teachers responding to their survey nationwide rated counseling services for students in their schools only Fair (35%) or Poor (35%) (p. 198).

Some teachers were discouraged by what they saw as unsuccessful attempts to reach all students in their classes: "I wish I could do more. For low kids I use a supplemental remedial text and try to do special activities. I don't do as well with gifted kids." Another teacher spoke of the "passive-resistant" students she has, lamenting that "There are so many outside forces that we can't deal with," a concern echoed by the other

two teachers in her group. One teacher indicated that she had simply given up on individualization: "I don't individually instruct all 170 kids. That is a totally unreasonable expectation. I've accepted that."

However, most of the teachers in our groups have not given up on the idea of doing what they can to reach as many students as possible. Cooperative learning appears to be a vehicle that many teachers find helpful for engaging all students in the learning process. Many teachers using some form of cooperative learning, group work, or peer tutoring reported success in extending the reach of direct instruction to individual students. One teacher explicitly said that he found group work to be the most successful activity in his diverse classrooms as it allowed him to give academically struggling students a "peer student teacher." Another teacher reported that she had successfully used cooperative learning for a while, but that her students like variety and that, therefore, she had to try something else. As one teacher said, "Everything works for a while and nothing works forever."

Variety is not only the spice of life, most educators agree that it is essential in diverse classrooms. Goodlad, in his 1984 study of schooling in the United States, noted that one of the most "disturbing" findings in his study was the narrow range of teaching practices used by teachers in their sample, especially at the secondary level (p. 298). Teachers in our cooperative study groups appeared to generally use a variety of teaching practices and activities. Yet, varying teaching methods as a means of teaching more effectively in diverse classrooms was specifically mentioned only four times in four groups. Therefore, the extent to which teachers in our groups consciously believe in the importance of using varied teaching practices (in addition to using varied activities) is far from clear.

In their quantitative synthesis of adaptive education and student outcomes, Waxman et al., (1985) identified seven characteristics of adaptive education programs having strong and consistent effects on cognitive, affective, and behavioral learning outcomes: (a) instruction based on the assessed capabilities of each student; (b) materials and procedures that permit each student to make progress in mastering the curricula at a pace suited to his or her abilities and interests; (c) periodic evaluations of progress to inform the student of his or her mastery; (d) students assuming self-responsibility for diagnosing their current needs and abilities, for planning and pursuing individual learning activities, and for evaluating mastery; (e) alternative learning activities and materials for aiding students' acquisition of academic skills and content; (f) student choice in selecting educational goals, outcomes,

and activities; and (g) students assisting each other in pursuing individual goals and cooperating in achieving group goals (p. 229).

Characteristics b, e, f and g were mentioned in complete or partial form by teachers in many of our groups. On the other hand characteristics a, c and d -- all having to do with assessment and evaluation -- were not mentioned. Teachers in our study apparently did not view assessment as useful for meeting the challenge of diversity in their classrooms. Since the literature in the field seems unanimous on the importance of accurate assessment in any attempt to individualize instruction in diverse classrooms, some teachers may benefit from developing some means to assess and then effectively utilize information about their students' strengths and weaknesses to enhance their effectiveness in teaching them.

### **Limitations of the Study**

The Member Check process used to synthesize and quantify results in this study did not always reflect qualitatively the actual depth of teachers' feeling about some issues. An example is the perception of some teachers that a lack of administrative support makes it more difficult for them to cope with diversity in their classrooms. In reviewing transcripts from the Cooperative Study Groups, we attempted to be alert to any occasions such as the above when either the length and/or the depth of feeling expressed was not adequately represented by the Member Check data. Where discrepancies occurred they were noted.

Additionally, teacher responses to this particular question were limited to some extent by the nature of the question. Because we asked what actions teachers take to address diversity in their classrooms, teachers most often described what actions they had actually taken, often omitting mention of actions they wish they could have taken or would like to have seen taken. Discussions in some of the groups nevertheless strayed into these areas, with teachers identifying factors beyond their control that made it difficult to attend to the demands of individualized instruction. These discussions revealed a great deal of teacher frustration with administrators, limited resources, and the impact of students' personal problems on their ability and willingness to learn.

### **Conclusion**

Teachers in our study groups reported taking a variety of actions to address the challenge of academic diversity in their classrooms. Some of these actions were pedagogical; others involved organizational techniques like cooperative learning or the

use of particular instructional materials or activities or motivational activities. Many of the techniques teachers reported using were among those recommended in the current literature on adaptive education. Yet, teachers in our study groups often conveyed the impression that they were not entirely satisfied with what they do to address diversity and in some cases seemed uncertain as to whether they really are addressing diversity. Furthermore, a number of teachers expressed a great deal of frustration with problems and situations they believed were beyond their control.

One element identified in the literature, but not focused upon by teachers in our groups, was the role that assessment may play in facilitating individualization. In addition to identifying students' strengths and weaknesses, assessment may be useful in addressing issues of student motivation and attitude -- an important area of concern to teachers in our study. Brophy (1987) noted that motivation strategies are ineffective unless, along with meeting several other preconditions, teachers program for student success and assist student learning through guidance and feedback (p. 42).

Regular and content-sensitive assessment might help teachers identify student learning problems as well as plan better for student success. For example, students with learning disabilities often have inadequate background knowledge (Bos & Anders, 1987). Testing students prior to each instructional unit might alert teachers to deficiencies in particular areas, allowing them to plan for additional instruction as needed. More frequent assessment might also help teachers diagnose student learning problems with organizing or remembering information - two deficiencies also common among students with learning disabilities (Ellis, Deshler, & Schumaker, 1989). As teachers identify learning problems, they can incorporate learning strategies and devices in their instruction. Such instructional adaptations are not new; many teachers over the years have used methods such as mnemonic remembering devices to help students learn and remember new information. As student academic diversity presents teachers with more non-strategic learners, teachers may need to incorporate more such devices and strategies into their teaching.

Another possibly useful approach to individualizing instruction may be found in suggestions by Good and Stipek (1983) that teachers need "an improved set of observational skills for learning from students" (p. 38). Similarly, Wang and Lindvall (1984) reported that careful observation combined with effective spontaneous decision making in classrooms "has been shown to be a major characteristic of teachers who are successful in providing adaptive instruction" (p. 197).

An area for further research appears to be whether helping teachers gather more accurate information about their students and providing them with a few well-

formulated instructional adaptations to use in specific situations might assist both teachers and researchers in expanding the body of knowledge about adapting instruction to individual student needs. With improved formal and informal information about students, teachers may be better served in planning for and teaching in diverse classrooms.

## References

- Bos, C.S. & Anders, P.L. (1987). Semantic feature analysis: An interactive teaching strategy for facilitating learning from text. *Learning Disability Focus*, 3(1), 55-59.
- Brophy, J. (1987). Synthesis of research on strategies for motivating students to learn. *Educational Leadership*, 45, 40-48.
- Carnegie Foundation for the Advancement of Teaching. (1988). *Report card on school reform - The teachers speak*. Princeton, NJ: Princeton University Press.
- Carnegie Foundation for the Advancement of Teaching. (1990). *The condition of teaching - A state-by-state analysis*. Lawrenceville, NJ: Princeton University Press.
- Corno, L., & Snow, R.E. (1986). Adapting teaching to individual differences among learners. In M.C. Wittrock (Ed.), *Handbook of research on teaching*. (3rd ed. pp. 605-629). New York: Macmillan.
- Cronbach, L.J. (1967). How can instruction be adapted to individual differences? In R. M. Gagne (Ed.), *Learning and individual differences* (pp. 23-44). Columbus, OH: Charles E. Merrill.
- Ellis, E.S., Deshler, D.D., & Schumaker, J.B. (1989). Teaching adolescents with learning disabilities to generate and use task-specific strategies. *Journal of Learning Disabilities*, 22(2), 108-130.
- Good, T.L., & Stipek, D.J. (1983). Individual differences in the classroom: A Psychological perspective. In G.D. Fenstermacher & J.I. Goodlad (Eds.), *Individual differences and the common curriculum - 82nd Yearbook of the National Society for the Study of Education, Part 1* (pp. 9-43). Chicago: National Society for the Study of Education.
- Goodlad, J.I. (1984). *A place called school*. New York: McGraw Hill.
- Lovitt, T.C. (1989). *Introduction to Learning Disabilities*. Boston: Allyn and Bacon.
- Wang, M.C., & Lindvall, C.M. (1984). Individual differences and school learning environments. *Review of Research in Education*, 11, 161-225.
- Waxman, H.C., Wang, M.C., Anderson, K.A., & Walberg, H.J. (1985). Adaptive education and student outcomes: A quantitative synthesis. *Journal of Educational Research*, 78, 228-236.
- Veenman, S. (1984). Perceived problems of beginning teachers. *Review of Educational Research*, 54, 143-78.

## Appendix 1

## Cooperative Study Group Results for Question 2: Actions Taken to Meet the Biggest Challenge Presented by Diversity in the Classroom

Response Categories/Subcategories	No. of Items	No. of Groups (N=12)	Mean Agreement Rating*
Instructional actions			
Using a variety of activities	19	9	2.77
Using motivational techniques	15	11	2.60
Using whole-group methods	15	8	2.42
Using different groupings	13	8	1.75
Using textbook & materials creatively	13	8	2.47
Using different teaching methods	9	7	3.89
Changing the class climate/structure	8	5	3.01
Adjusting assignments	7	5	2.19
Modifying curriculum goals	6	4	1.78
Using techniques to modify student behavior	5	3	2.25
Using more structure	4	4	2.29
Modifying evaluation processes	3	2	2.14
System-related actions			
Changing student placement	3	3	2.46
Obtaining extra help for students	3	3	1.86
Professional actions			
Attending workshops	1	1	1.75
Working extra hours	1	1	1.50

\*(7 = Low agreement; 1 = High agreement)